NON-TECHNICAL ABSTRACT

Small-cell lung cancer is a rapidly growing variant of lung cancer that is fatal in more than 90% of patients within two years of diagnosis despite treatment with both chemotherapy and radiation therapy. There is laboratory and clinical evidence in animal systems indicating that under the right circumstances immune cells, called lymphocytes, can be stimulated to proliferate, recognize, and destroy cancer cells. In clinical studies in humans, injection of Interleukin-2 in hi doses stimulates lymphocyte growth and causes shrinkage of highly resistant cancers in some p..ients, albeit with substantial side effects. In this study, small-cell lung cancer cells from patients will be grown in the test tube and the gene for interleukin-2 will be placed into these cells by means of a carrier to transport the gene, called a plasmid. The tumor cells, now carrying the gene for production of interleukin-2 are radiated so that they are alive but cannot grow and then are returned by injection under the skin into the patient. The intent is to have the tumor cell produce interleukin-2 locally and thereby stimulate sets of lymphocytes that are specifically geared to recognize the tumor cells and destroy them. By means of repeated injections of these gene-altered cells, it is hoped that adequate numbers of stimulated lymphocytes will circulate and cause the destruction of the remaining unaltered lung cancer cells in the patient's body. Toxicity is expected to be minimal because of the low doses of Interleukin-2 generated by the cells. Patients will be carefully monitored for any adverse effects and to determine if clinical response occurs.